

Invention description to certificate of authorship.

The way of determination of non-linearity of an index of refraction of optical medium.

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Invention claims: Way of definition of nonlinearity of an index of refraction of optical medium consisting in that they shape an exploratory elliptical polarized light wave, route it into a researched sample, register an angle  $\alpha_m$  of rotation of the ellipse of polarization of a wave, passed the researched sample distinguished of subjects, that with the purpose of rise of self-descriptiveness of a way at the expense of a possibility of joint definition of nonlinearity factors of an index of refraction of the researched environment for linearly polarized light  $n_{2l}$  and light, polarized on a circle  $n_{2k}$  a part of a elliptical polarized wave route to a standard sample, register an angle  $\alpha_m$  of rotation of the ellipse of polarization of a wave, passed standard sample, then at the same time pass through a researched sample towards one another two additional elliptical polarized wave with equal intensity, register a critical angle  $\alpha_p$  of rotational displacement of the ellipse of exploratory elliptical polarized light wave, passed through a researched sample, and the nonlinearity factors of an index of refraction of the researched environment for linearly polarized

light  $n$  and light, polarized on by the circle  $n$  , determine under the following formulas:

$$n_{2l} = \frac{12\pi \cdot \alpha_m \cdot K \cdot \chi_e \cdot (5 + \cos 2\alpha_p)}{n_{0e} \cdot \alpha_e \cdot (1 - K) \cdot l_m (1 - \cos 2\alpha_p)} \cdot \chi_e^{1221} ;$$

$$n_{2k} = \frac{24\pi \cdot \alpha_m \cdot K \cdot \chi_e \cdot (2 + \cos 2\alpha_p)}{n_{0e} \cdot \alpha_e \cdot (1 - K) \cdot l_m (1 - \cos 2\alpha_p)} \cdot \chi_e^{1221} ,$$

Where:

$n_{0e}$  - linear index of refraction of the standard medium.

$\chi_e^{1221}$  - multiplier of tensor of non-linearity sensitivity of standard medium.

$K$  - the part of light energy directed to the standard sample.

$\alpha_m$  - length of investigated sample.

$\alpha_e$  - length of standard sample.